OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[x] ORIGINAL [ ] REVISION NO. _____

Project No. A-3402 GTRI/~~GTL~~ DATE 11/29/82

Project Director: Tom Starr ~~School~~/Lab EMSL

Sponsor: Simmons USA

Type Agreement: P. O. No. A76191

Award Period: From 10/25/82 To 11/25/82 (Performance) _____ (Reports)

Sponsor Amount: Total Estimated: $ 992.44 Funded: $ 992.44

Cost Sharing Amount: $ _____ Cost Sharing No: _____

Title: Chemical Analysis

ADMINISTRATIVE DATA

OCA Contact Linda H. Bowman

1) Sponsor Technical Contact:

2) Sponsor Admin/Contractual Matters:
M. E. Williams
Simmons Co.
353 Jones Ave. NW
Atlanta, GA 30314

Defense Priority Rating: None

Military Security Classification: _____
(or) Company/Industrial Proprietary: None

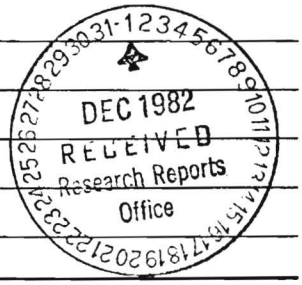
RESTRICTIONS

See Attached NA Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with NA

COMMENTS:



COPIES TO:

Research Administrative Network
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Project File
Other PD
Other _____

FORM OCA 4:781 (Rev 982)

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION SHEET

Date 11/29/82

Project Title: Chemical Analysis

Project No: A-3402

Project Director: Tom Starr

Sponsor: Simmons Co.

Effective Termination Date: 11/25/82

Clearance of Accounting Charges: _____

Grant/Contract Closeout Actions Remaining:

- [x] Final Invoice and Closing Documents
- [ ] Final Fiscal Report
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Assigned to: EMSL (School/Laboratory)

COPIES TO:

Administrative Coordinator	Research Security Services	EES Public Relations (2)
Research Property Management	Reports Coordinator (OCA)	Computer Input
Accounting	Legal Services (OCA)	Project File
Procurement/EES Supply Services	Library	Other

FORM OCA 10:781

A-3402

Georgia Institute of Technology
ENGINEERING EXPERIMENT STATION
ATLANTA, GEORGIA 30332

November 2, 1982

Mr. Marvin Williams, Purchasing Agent
Simmons U.S.A.
353 Jones Avenue, N.W.
Atlanta, GA 30314

Dear Marv:

In accordance with Simmons P.O. A-76191, research was conducted to determine the composition of Lanasol 150 solvent, the solvent composition of a sample of material taken from the dip tank, and a property analysis of a sample of pure paint from a freshly opened drum. The results of our investigations, as well as our conclusions and recommendations are embodied in the following report.

PROBLEM

The reduced paint in the dip tank in the HAB Frame section was apparently settling out and not giving the frames the proper coating or appearance expected. It was thought this phenomenon was similar to a situation experienced in April of 1982. In that instance the wrong solvent (mineral spirits) was used to reduce the paint to the recommended dipping viscosity and was corrected by changing to the recommended solvent (Solvesso 150).

RESULTS OF INVESTIGATIONS

The analysis of the 1-quart sample of Lanasol 150 by our gas chromatograph/mass spectrophotometer (GC/MS), data enclosed, indicates a mixture of aromatic solvents that would have the proper solvency expected i.e. a Kauri-Butanol Valve (K.B.) of 90-92.

The analysis of the 1-quart sample containing the reduced paint from the dip tank by the GC/MS shows this to be a mixture of the above Lanasol 150 and the solvents in the original paint (shown in a later analysis). Data sheets enclosed. The property analysis of the 1-quart sample of Durako 2-6-3250 Black Dip Baking Enamel gave the following results:

	GIT-Results	Durako-Product Specification Data Sheet
Grind	6	5-6
Weight/Gal.	8.8	9.18 ± .2
Solids by wt.	50.6%	53 ± 1%
Reduction	2/1 Lanasol 150	1-quart sample from tank
Viscosity	34 secs. #2 Zahn cup	27 secs.
Grind	6	5½

This reduced mixture (Henton Mix) was analyzed by the GC/MS and the results (enclosed) indicated the solvent mixture to be the same as the sample taken from the tank, only quantitatively less of the Lanasol 150 solvent.

CONCLUSIONS AND RECOMMENDATIONS

From the results of our investigations above, this apparently is not a "kicking out" or gelling type of situation, but one of settling of pigment due to over reduction of the fresh paint from the drums, combined with starting with a low solids material. The low solids could result from a lack of thoroughly mixing the paint in the drums before adding to the dip tank.

To correct this situation our recommendations are: (1) obtain a 55-gallon drum mixer with an explosion-proof motor, and mix thoroughly each drum of fresh paint before adding to dip tank, making sure all pigment is incorporated from the bottom of the drum, (2) keep dip tank agitated at all times to prevent any settling of pigment, (3) maintain a viscosity range of 29-31 secs. on the #2 Zahn cup on the reduced mixture in the dip tank.

Respectfully submitted,

Leslie E. Henton
Research Scientist II
Energy and Materials Sciences Laboratory

DISCLAIMER: This report represents the opinion of the author. It carries no official endorsement by the Georgia Institute of Technology.

Run Conditions (Finnigan OWA 30B)

GC Parameters:

200 DEG = Zone Temp.

50 DEG = Initial Temp.

200 DEG = Final Temp.

10 MIN = Initial Time

10.0 D/M = Ramp Rate

10 MIN = Final Time

240 DEG = Sep. Set Pt.

80 DEG = Manif. Set Pt.

INJ. MODE: PKD

60 SEC = DV OPN

FIL/MUL MODE:AUTO

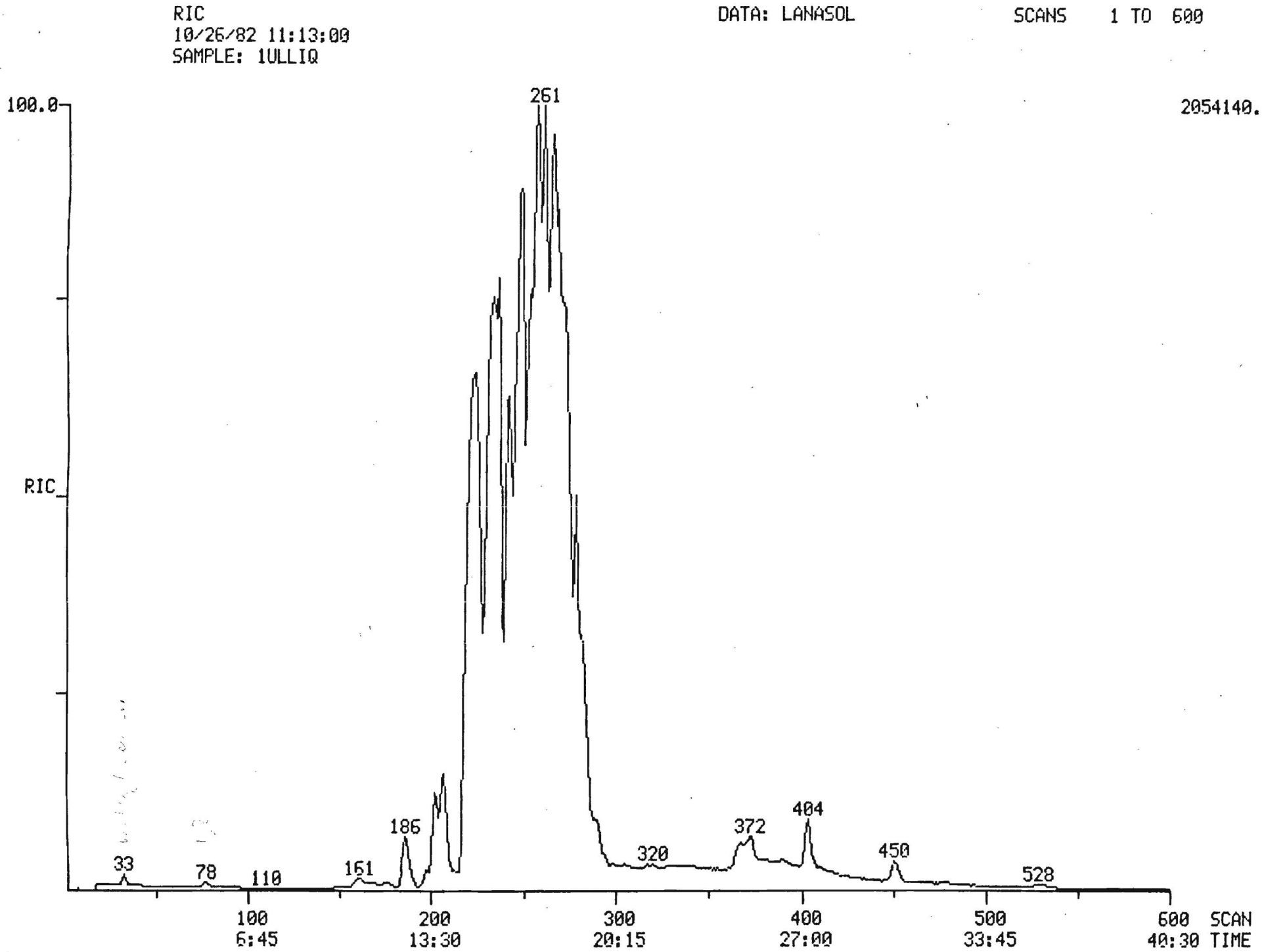
SCAN FROM 30 AMU TO 650 AMU IN 4.0 SEC.

GC Column:

6' X 1/4" - all glass column

3% OV-1 on 60/80 Chromosorb B

Flow Rate 25 ml/min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500
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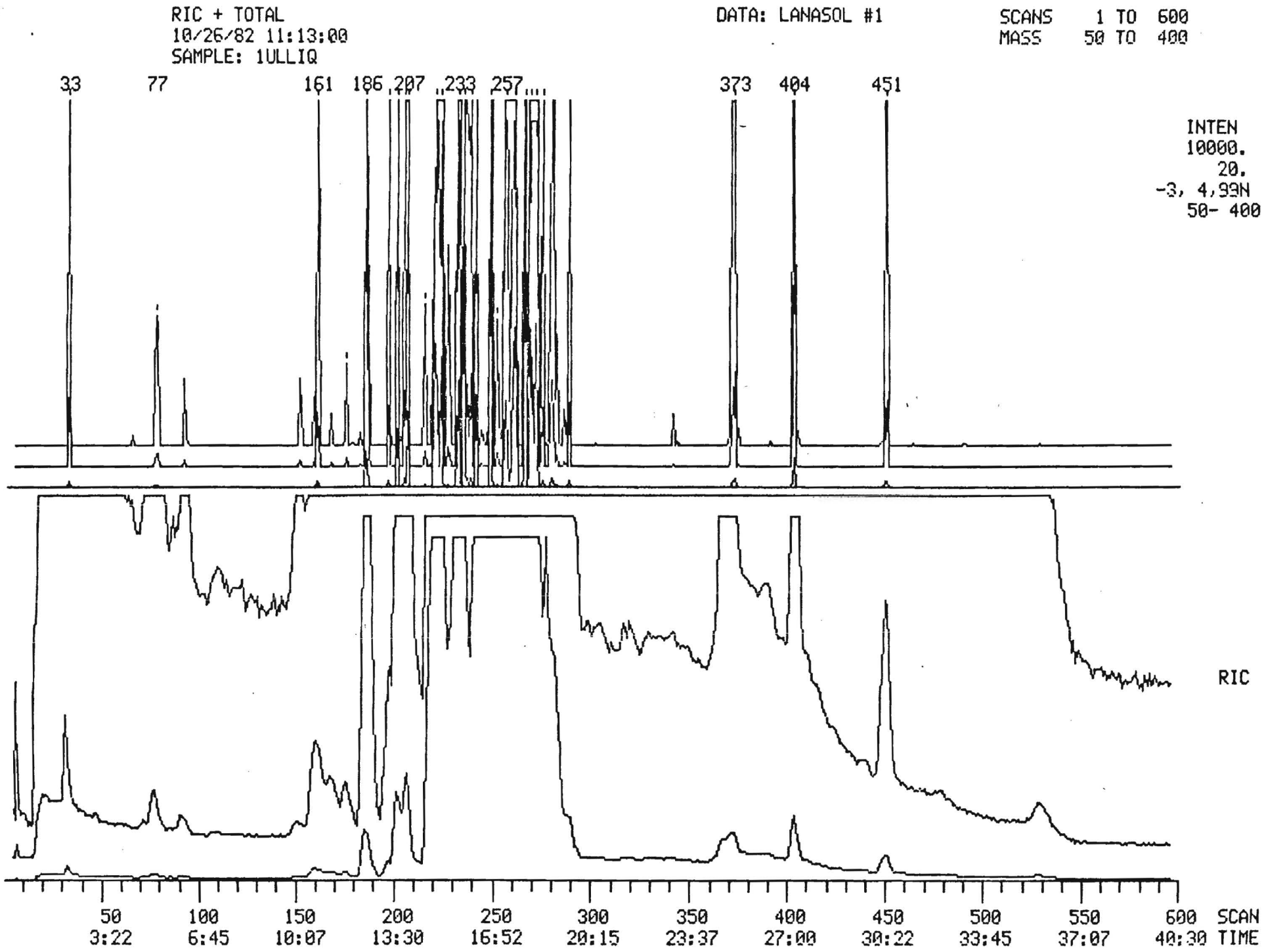
600
40:30
SCAN
TIME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MASS 50 TO 400
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161
186
207
233
257
373
404
451
INTEN
10000.
20.
-3, 4,99N
50- 400
RIC
50
3:22
100
6:45
150
10:07
200
13:30
250
16:52
300
20:15
350
23:37
400
27:00
450
30:22
500
33:45
550
37:07
600
40:30
SCAN
TIME

FINNIGAN ORGANICS IN WATER ANALYZER
QUANTITATION REPORT FILE: FLSRQ

DATA: 263250.TI
10/26/82 13:09:00
SAMPLE: 1ULLIQ
SUBMITTED BY: SIMMONS ANALYST: TWU

AMOUNT=AREA(HGHT) * REF. AMNT/(REF. AREA(HGHT)* RESP. FACT)
RESP. FAC. FROM LIBRARY ENTRY

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1	BENZENE, METHYL-
2	CYCLOHEXANE, 1, 3-DIMETHYL-, TRAN
3	NOT IDENTIFIED
4	NOT IDENTIFIED
5	NOT IDENTIFIED
6	BENZENE, 1, 4-DIMETHYL-
7	BENZENE, 1, 2-DIMETHYL-
8	NOT IDENTIFIED
9	BENZENE, 1, 2, 4-TRIMETHYL-
10	BENZENE, 1, 2, 4-TRIMETHYL-
11	NOT IDENTIFIED
12	UNKNOWN
13	BENZENE, 1-METHYL-2-PROPYL-
14	NOT IDENTIFIED
15	NOT IDENTIFIED
16	BENZENE, 2-ETHYL-1, 4-DIMETHYL-
17	NOT IDENTIFIED
18	NOT IDENTIFIED
19	NOT IDENTIFIED
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36	NOT IDENTIFIED
37	NOT IDENTIFIED
38	NOT IDENTIFIED
39	NOT IDENTIFIED

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
1	TOT	34	2:18	24	0.133	A BB	612862.	9.570	0.84
2	TOT	40	2:42	24	0.156	A BV	331018.	5.169	0.45
3	TOT	50	3:22	24	0.195	A BB	316856.	4.948	0.43
4	TOT	62	4:11	24	0.242	A BB	274688.	4.289	0.37
5	TOT	73	4:56	24	0.285	A BV	2580310.	40.292	3.52

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
6	TOT	80	5:24	24	0.312	A VB	6269640.	97.901	8.54
7	TOT	93	6:17	24	0.363	A BB	3104650.	48.479	4.23
8	TOT	179	12:05	24	0.699	A BB	83568.	1.305	0.11
9	TOT	189	12:45	24	0.738	A BB	1824930.	28.496	2.49
10	TOT	204	13:46	24	0.797	A BB	1632640.	25.494	2.22
11	TOT	204	13:46	24	0.797	A BB	1879080.	29.342	2.56
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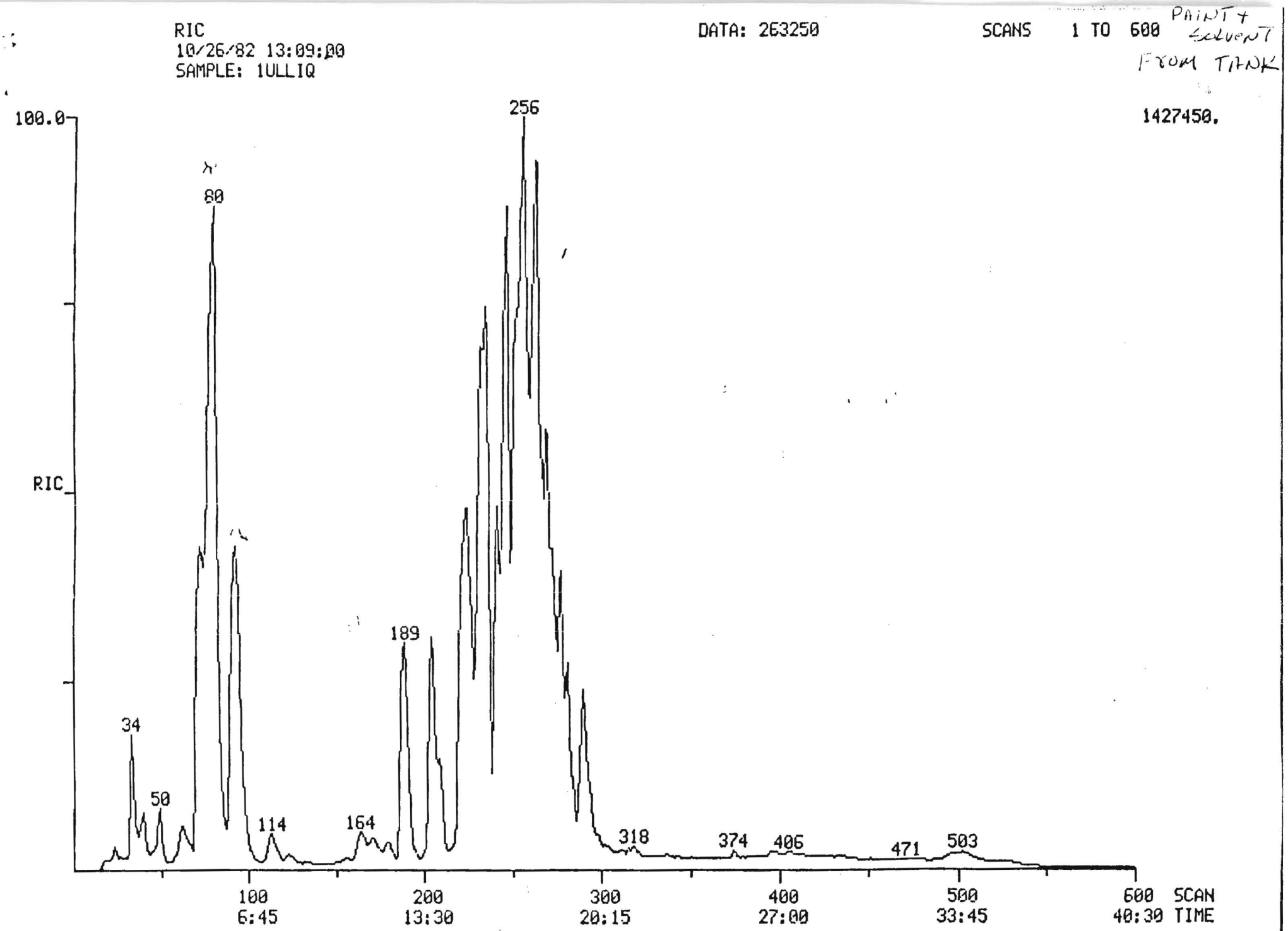
13	TOT	222	14:59	24	0.867	A BB	2940980.	45.923	4.01
14	TOT	223	15:03	24	0.871	A BV	4513310.	70.475	6.15
15	TOT	234	15:48	24	0.914	A VB	4687870.	73.201	6.39
16	TOT	234	15:48	24	0.914	A VB	3668220.	57.279	5.00
17	TOT	234	15:48	24	0.914	A BB	3329020.	51.983	4.54
18	TOT	241	16:16	24	0.941	A BV	867840.	13.551	1.18
19	TOT	241	16:16	24	0.941	A BV	1402110.	21.894	1.91
20	TOT	247	16:40	24	0.965	A VB	2777590.	43.372	3.79
21	TOT	247	16:40	24	0.965	A VV	2025210.	31.624	2.76
22	TOT	255	17:13	24	0.996	A VV	4025850.	62.864	5.49
23	TOT	256	17:17	24	1.000	A BV	5207030.	81.308	7.10
24	TOT	256	17:17	24	1.000	A BV	6404090.	100.000	8.73
25	TOT	263	17:45	24	1.027	A VV	3383800.	52.838	4.61
26	TOT	264	17:49	24	1.031	A BV	1910780.	29.837	2.60
27	TOT	270	18:13	24	1.055	A VB	858112.	13.399	1.17
28	TOT	264	17:49	24	1.031	A BV	1600510.	24.992	2.18
29	TOT	270	18:13	24	1.055	A VB	1405430.	21.946	1.92
30	TOT	270	18:13	24	1.055	A BB	1424120.	22.238	1.94
31	TOT	277	18:42	24	1.082	A BV	606720.	9.474	0.83
32	TOT	281	18:58	24	1.098	A VB	401536.	6.270	0.55
33	TOT	290	19:34	24	1.133	A BB	931744.	14.549	1.27
34	TOT	336	22:41	24	1.312	A BB	18770.	0.293	0.03
35	TOT	337	22:45	24	1.316	A BV	13776.	0.215	0.02
36	TOT	342	23:05	24	1.336	A VB	6198.	0.097	0.01
37	TOT	350	23:37	24	1.367	A BB	8208.	0.128	0.01
38	TOT	374	25:15	24	1.461	A BB	30728.	0.480	0.04
39	TOT	406	27:24	24	1.586	A VV	20442.	0.319	0.03

DATA FILE: 263250 LIBRARY SEARCHED: LIBRARYNB

ENTRY	SCAN	PURITY	FIT	# LIB ENTRIES WITH FIT > 850	# OF SATURATED PEAKS IN SCAN
1	34	965	997	8	0
2	40	879	965	5	0
3	50	1	41	0	0
4	62	1	44	0	0
5	73	1	38	0	0
6	80	901	992	4	1
7	93	913	992	5	0
8	179	1	52	0	0
9	189	907	994	7	0
10	204	900	986	8	0
11	209	1	48	0	0
12	217	1	25	0	0
13	221	858	938	1	0
14	224	1	59	0	0
15	232	1	68	0	0
16	234	865	970	2	0
17	238	1	41	0	0
19	241	1	57	0	0
20	247	1	74	0	1
21	250	1	35	0	0
23	256	1	78	0	0
24	259	1	28	0	0
25	263	1	54	0	0
26	266	1	44	0	0
28	268	1	25	0	0
30	270	895	950	6	0
31	277	1	69	0	0
33	290	1	73	0	0
34	336	1	40	0	0
35	342	1	25	0	0
37	350	1	31	0	0
38	374	1	73	0	0
39	406	1	68	0	0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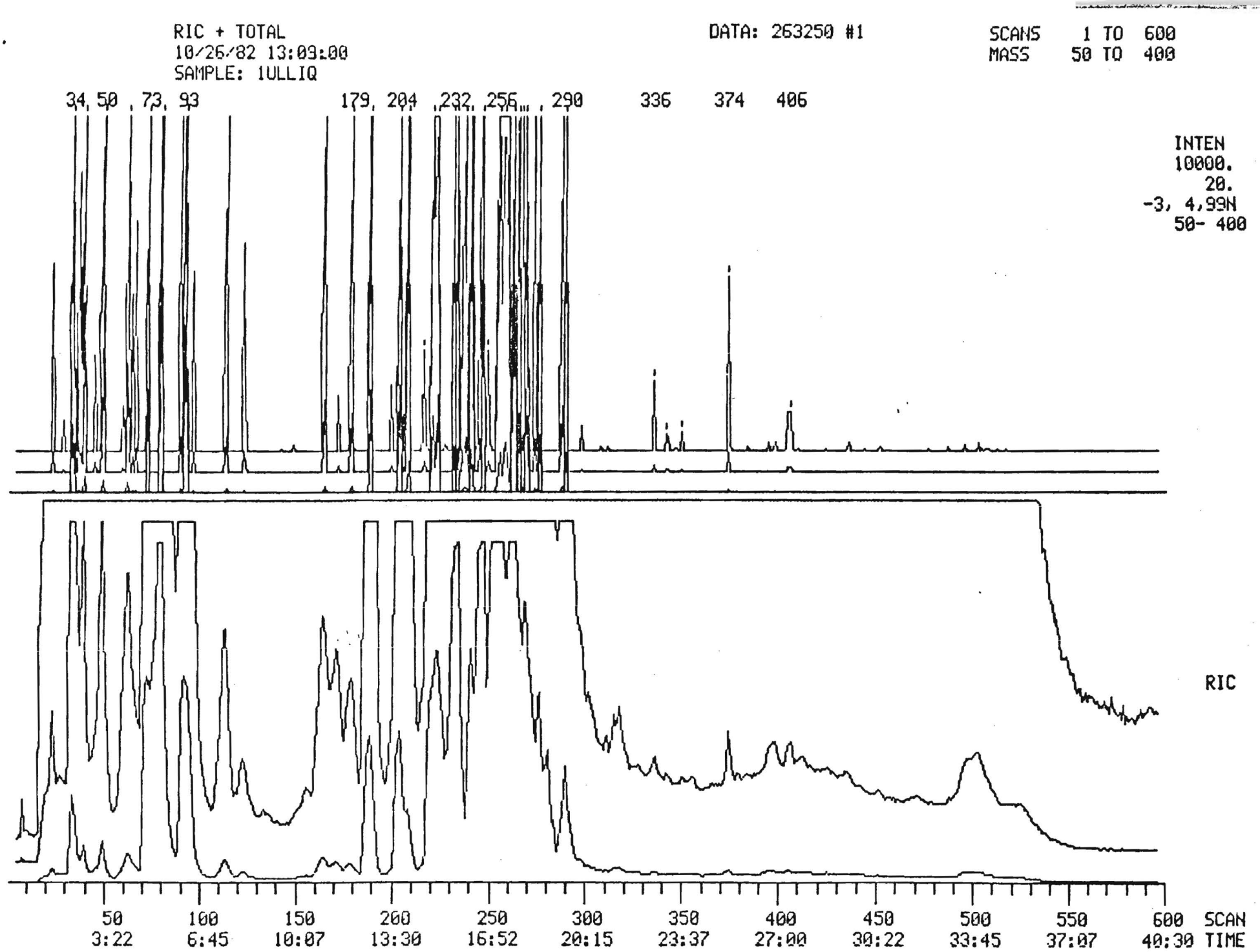
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33:45
550
37:07
600
40:30
SCAN
TIME

FINNIGAN ORGANICS IN WATER ANALYZER
QUANTITATION REPORT FILE: FLSRQ

DATA: LANASOL.TI
10/26/82 11:13:00
SAMPLE: 1ULLIQ
SUBMITTED BY: SIMMONS ANALYST: TWU

AMOUNT=AREA(HGHT) * REF. AMNT/(REF. AREA(HGHT)* RESP. FACT)
RESP. FAC. FROM LIBRARY ENTRY

NO	NAME
1	BENZENE, METHYL-
2	BENZENE, 1, 2-DIMETHYL-
3	BENZENE, (1-METHYLETHYL)-
4	BENZENE, (1-METHYLETHYL)-
5	BENZENE, 1, 2, 4-TRIMETHYL-
6	BENZENE, (2-METHYLPROPYL)-
7	BENZENE, (1-METHYLETHYL)-
8	NOT IDENTIFIED
9	NOT IDENTIFIED
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11	UNKNOWN
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13	NOT IDENTIFIED
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16	BENZENE, 2-ETHYL-1, 4-DIMETHYL-
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18	NOT IDENTIFIED
19	NOT IDENTIFIED
20	NOT IDENTIFIED
21	NOT IDENTIFIED
22	1H-INDENE, 2, 3-DIHYDRO-4-METHYL
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24	NOT IDENTIFIED
25	NOT IDENTIFIED
26	NOT IDENTIFIED
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28	NOT IDENTIFIED
29	NOT IDENTIFIED
30	NOT IDENTIFIED
31	NOT IDENTIFIED

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
1	TOT	33	2:14	24	0.124	A BB	61106.	0.568	0.06
2	TOT	78	5:16	24	0.293	A BB	57823.	0.537	0.06
3	TOT	161	10:52	24	0.605	A BV	126134.	1.172	0.13
4	TOT	176	11:53	24	0.662	A BB	32630.	0.303	0.03
5	TOT	186	12:33	24	0.699	A BB	542172.	5.037	0.58
6	TOT	197	13:18	24	0.741	A BV	81720.	0.759	0.09
7	TOT	202	13:38	24	0.759	A BB	1138300.	10.576	1.21
8	TOT	202	13:38	24	0.759	A BV	837784.	7.784	0.89
9	TOT	207	13:58	24	0.778	A VB	1087830.	10.107	1.15
10	TOT	207	13:58	24	0.778	A BB	1427330.	13.261	1.52
11	NOT FOUND								
12	TOT	222	14:59	24	0.835	A BB	6566330.	61.007	6.97
13	TOT	222	14:59	24	0.835	A BV	8748030.	81.277	9.29

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15	TOT	236	15:56	24	0.887	A BB	5457400.	50.704	5.79
16	TOT	241	16:16	24	0.906	A BV	1599480.	14.861	1.70
17	TOT	236	15:56	24	0.887	A BB	4637690.	43.088	4.92
18	TOT	241	16:16	24	0.906	A BV	1699830.	15.793	1.80
19	TOT	249	16:48	24	0.936	A VB	3863550.	35.896	4.10
20	TOT	249	16:48	24	0.936	A VV	2542590.	23.623	2.70
21	TOT	257	17:21	24	0.966	A VB	5858300.	54.429	6.22
22	TOT	257	17:21	24	0.966	A BB	6414330.	59.595	6.81
23	TOT	261	17:37	24	0.981	A BV	9984510.	92.765	10.60
24	TOT	266	17:57	24	1.000	A BB	10763200.	100.000	11.43
25	TOT	272	18:22	24	1.023	A VB	4833270.	44.905	5.13
26	TOT	272	18:22	24	1.023	A VB	4209150.	39.107	4.47
27	TOT	272	18:22	24	1.023	A BV	2758650.	25.630	2.93
28	TOT	278	18:46	24	1.045	A VB	1755130.	16.307	1.86
29	TOT	372	25:07	24	1.398	A BB	565459.	5.254	0.60
30	TOT	404	27:16	24	1.519	A BB	472805.	4.393	0.50
31	TOT	450	30:22	24	1.692	A BB	238480.	2.216	0.25

DATA FILE: LANASOL LIBRARY SEARCHED: LIBRARYNB

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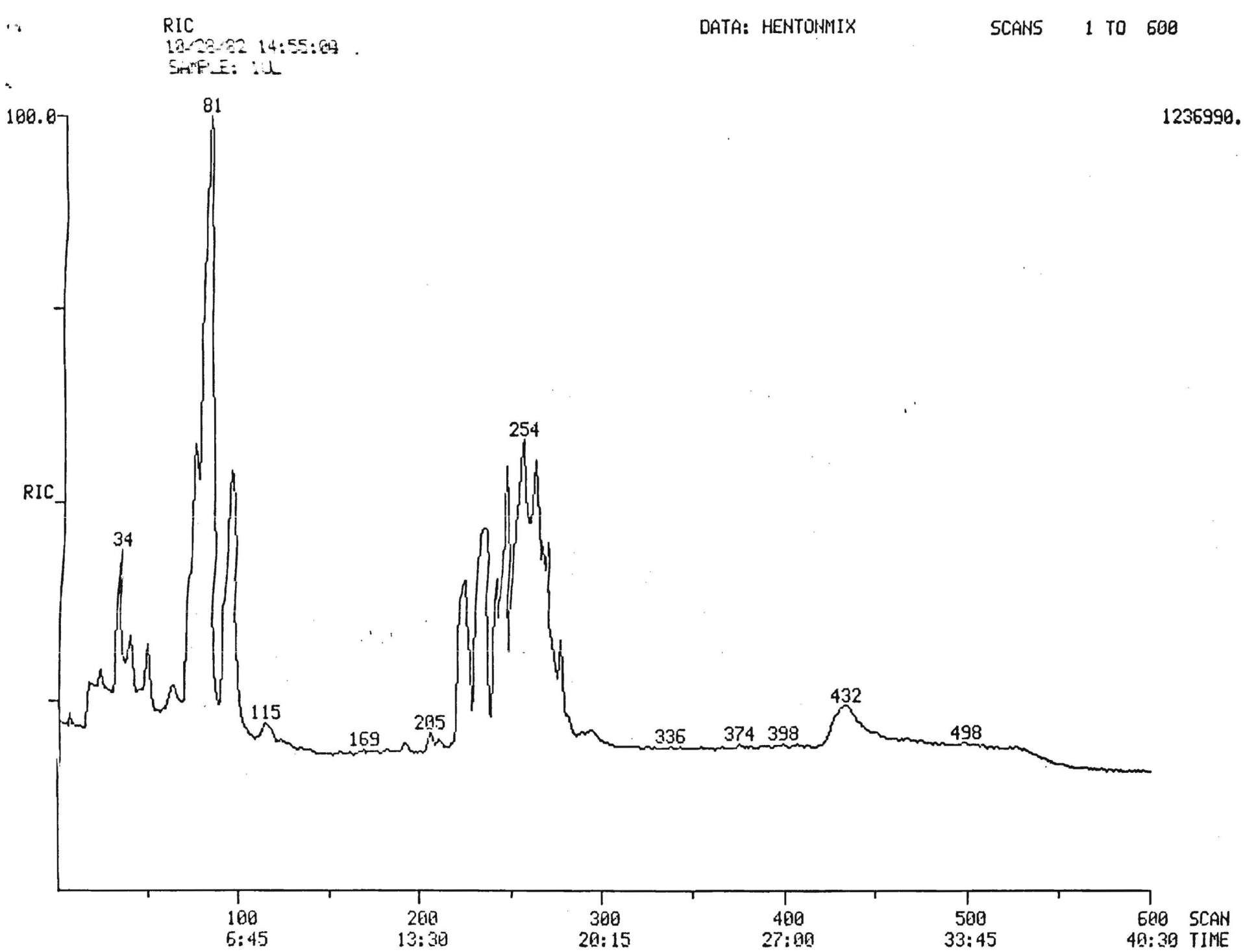
1	33	956	995	7	0
2	77	948	991	6	0
3	161	874	985	4	0
4	176	863	971	3	0
5	186	913	993	7	0
6	197	946	960	1	0
7	202	935	985	6	0
8	205	1	11	0	0
10	207	898	988	9	0
11	216	1	26	0	0
12	221	1	59	0	1
13	224	1	56	0	0
14	233	1	69	0	1
15	236	869	964	2	1
17	239	1	47	0	0
19	249	1	65	0	1
20	253	1	55	0	1
22	257	868	956	2	1
23	262	1	55	0	0
24	267	1	53	0	1
25	270	1	63	0	0
26	272	1	48	0	1
27	276	1	43	0	0
29	373	1	111	0	0
30	404	1	166	0	0
31	451	1	122	0	0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1236990.
RIC
81
254
34
115
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374
398
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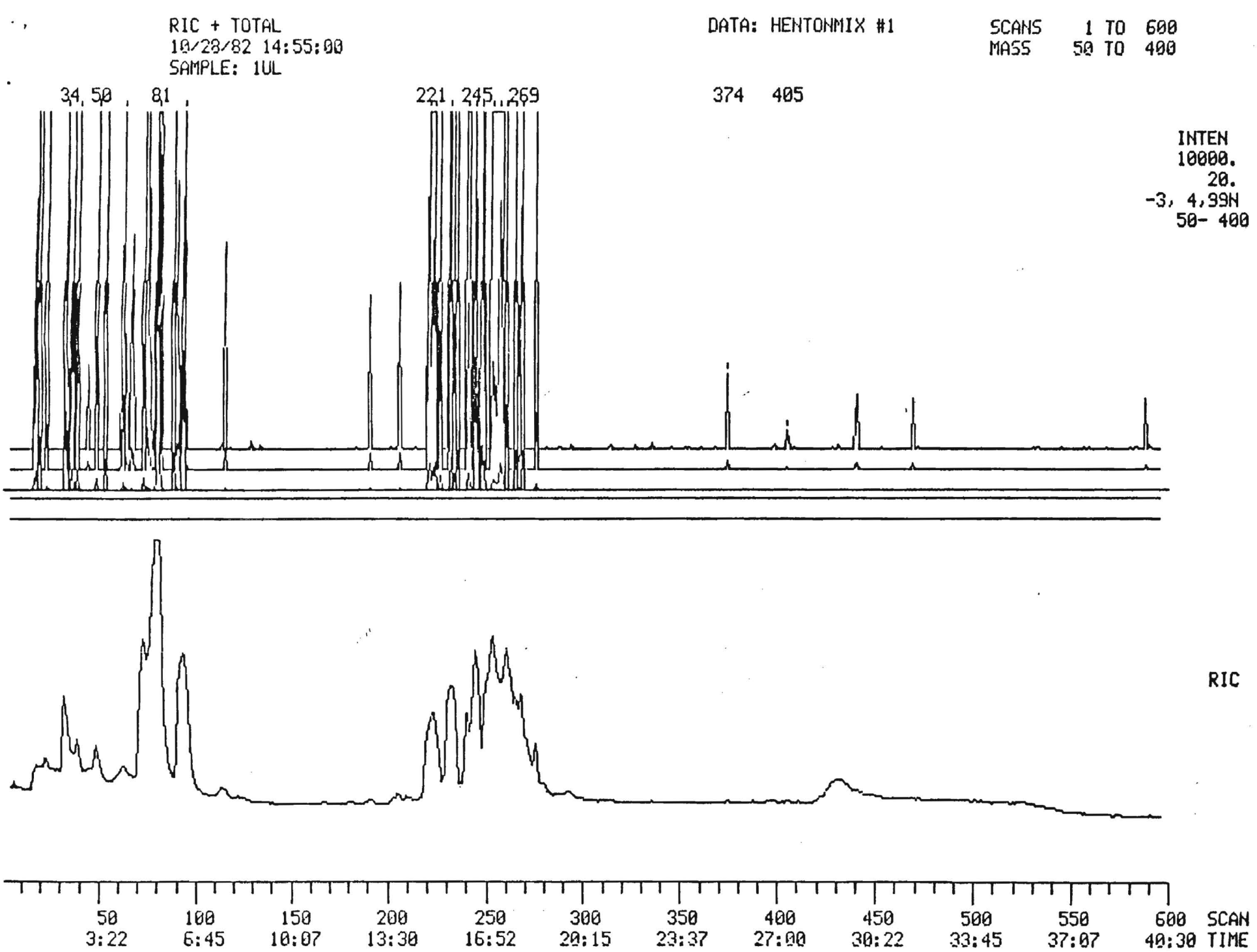
SCAN
TIME


RIC + TOTAL
10/28/82 14:55:00
SAMPLE: 1UL
DATA: HENTONMIX #1
SCANS 1 TO 600
MASS 50 TO 400
34, 50 , 81 ,
221, 245, 269
374 405
INTEN
10000.
20.
-3, 4,99N
50- 400
RIC
50
3:22
100
6:45
150
10:07
200
13:30
250
16:52
300
20:15
350
23:37
400
27:00
450
30:22
500
33:45
550
37:07
600
40:30
SCAN
TIME

FINNIGAN ORGANICS IN WATER ANALYZER
QUANTITATION REPORT FILE: FLSRQ

DATA: HENTONMIX.TI
10/28/82 14:55:00
SAMPLE: 1UL
SUBMITTED BY: SIMMONS ANALYST: TWU

AMOUNT=AREA(HGHT) * REF. AMNT/(REF. AREA(HGHT)* RESP. FACT)
RESP. FAC. FROM LIBRARY ENTRY

NO	NAME
1	BENZENE, METHYL-
2	NOT IDENTIFIED
3	NOT IDENTIFIED
4	UNKNOWN
5	BENZENE, 1, 4-DIMETHYL-
6	BENZENE, 1, 2-DIMETHYL-
7	BENZENE, 1-METHYL-3-PROPYL-
8	NOT IDENTIFIED
9	NOT IDENTIFIED
10	NOT IDENTIFIED
11	NOT IDENTIFIED
12	BENZENE, 1, 2, 3, 5-TETRAMETHYL-
13	BENZENE, 1, 2, 3, 5-TETRAMETHYL-
14	NOT IDENTIFIED
15	NOT IDENTIFIED
16	NOT IDENTIFIED
17	NOT IDENTIFIED
18	NOT IDENTIFIED
19	AZULENE
20	NOT IDENTIFIED
21	NOT IDENTIFIED
22	BENZENE, 1, 4-DIMETHYL-2-(1-METH
23	UNKNOWN
24	UNKNOWN

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
1	TOT	34	2:18	5	0.420	A BB	746152.	12.354	3.16
2	TOT	40	2:42	5	0.494	A BV	596057.	9.869	2.53
3	TOT	50	3:22	5	0.617	A VB	202240.	3.348	0.86
4	NOT FOUND								
5	TOT	81	5:28	5	1.000	A VB	6039960.	100.000	25.59
6	TOT	94	6:21	5	1.160	A BB	2336190.	38.679	9.90
7	TOT	222	14:59	5	2.741	A BB	1186010.	19.636	5.02
8	TOT	224	15:07	5	2.765	A BV	1114780.	18.457	4.72
9	TOT	232	15:40	5	2.864	A VB	1309180.	21.675	5.55
10	TOT	240	16:12	5	2.963	A BV	392192.	6.493	1.66
11	TOT	245	16:32	5	3.025	A VB	687104.	11.376	2.91
12	TOT	240	16:12	5	2.963	A BV	441344.	7.307	1.87
13	TOT	245	16:32	5	3.025	A VB	1125630.	18.636	4.77
14	TOT	245	16:32	5	3.025	A BV	1127420.	18.666	4.78
15	TOT	254	17:09	5	3.136	A BV	1170430.	19.378	4.96
16	TOT	259	17:29	5	3.198	A VB	440832.	7.299	1.87
17	TOT	254	17:09	5	3.136	A BV	1145850.	18.971	4.85
18	TOT	258	17:25	5	3.185	A VV	610816.	10.113	2.59
19	TOT	261	17:37	5	3.222	A VB	1102970.	18.261	4.67
20	TOT	261	17:37	5	3.222	A BV	552448.	9.147	2.34

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
21	TOT	268	18:05	5	3.309	A VV	618496.	10.240	2.62
22	TOT	269	18:09	5	3.321	A BB	657536.	10.886	2.79
23	NOT FOUND								
24	NOT FOUND								

DATA FILE: HENTONMIX LIBRARY SEARCHED: LIBRARYNB

ENTRY	SCAN	PURITY	FIT	# LIB ENTRIES WITH FIT > 850	# OF SATURATED PEAKS IN SCAN
1	34	948	996	6	0
2	40	1	57	0	0
3	50	1	70	0	0
4	63	1	54	0	0
5	81	915	994	6	1
6	94	911	991	5	0
7	221	868	959	5	0
8	224	1	84	0	0
9	232	1	78	0	0
10	241	1	112	0	0
12	245	878	984	3	0
14	248	1	105	0	0
15	254	1	75	0	0
17	257	1	69	0	0
19	261	909	980	2	0
20	265	1	79	0	0
22	269	889	956	6	0
23	374	1	69	0	0
24	405	1	58	0	0